

Sub
C1

1. A process for the production of lower aliphatic esters which comprises reacting a lower olefin with a saturated lower aliphatic mono-carboxylic acid in the vapour phase in the presence of a heteropolyacid catalyst, characterised in that a) the reaction is carried out in a plurality of reactors set up in series, and b) the feedstock is rendered substantially free of metallic or metal compound impurities prior to being brought into contact with the heteropolyacid catalyst.

2. A process as claimed in claim 1, wherein the feedstock has no more than 0.1 ppm of metals and/or metal compounds, prior to being brought into contact with the heteropolyacid catalyst.

3. A process as claimed in claim 1, wherein the feedstock has less than 0.01 ppm of metals and/or metal compounds, prior to being brought into contact with the heteropolyacid catalyst.

4. A process as claimed in claim 1, wherein the feedstock is rendered substantially free of metallic or metal compound impurities which arise from the corrosion of equipment, or which result from any water or acetic acid reactant used in the reaction.

5. A process as claimed in claim 4, wherein the metallic or metal compound impurities which arise from the corrosion of equipment comprise: iron, chromium, nickel and/or molybdenum.

6. A process as claimed in claim 4, wherein the metallic or metal compound impurities which result from any water or acetic acid reactant used in the reaction comprise sodium, potassium and/or calcium.

7. A process as claimed in claim 1, wherein the metallic or metal compound impurities are removed from the feed to the reactor using a guard bed and/or a vaporiser.

8. A process as claimed in claim 7, wherein the guard bed is in the form of an ion-exchange resin.

9. A process as claimed in claim 7, wherein the guard bed comprises amorphous aluminosilicates, clays, zeolites, aluminophosphates, silicoaluminophosphates, metalaluminophosphates or supported heteropolyacids.

10. A process as claimed in claim 1, wherein the metallic or metal compound impurities are removed from the feed to the reactor using a vaporiser which employs demister pads and/or a heavy ends take-off at the base of the vaporiser to remove said impurities.

11. A process as claimed in claim 10, wherein fresh acid is introduced into the vaporiser to scrub out the metallic or metal compound impurities.

12. A process as claimed in claim 1, wherein the saturated, lower aliphatic mono-carboxylic acid reactant is a C1-C4 carboxylic acid.

13. A process as claimed in claim 1, wherein said lower olefin is ethylene.

14. A process as claimed in claim 1, wherein the mole ratio of olefin to the lower monocarboxylic acid in the reactant gases fed to the first reactor is in the range of from 1:1 to 18 : 1.

15. A process as claimed in claim 1, wherein said plurality of reactors set up in series is in the form of one long reactor which has a plurality of catalyst beds set up in series.